Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Amendment of the Commission's Rules with Regard to Commercial Operations in the 1695-1710 MHz, 1755-1780 MHz, and 2155-2180 MHz Bands	)	GN Docket No. 13-185
	)	
Service Rules for Advanced Wireless Services in the 2155-2175 MHz Band	)	WT Docket No. 07-195 (Proceeding Terminated)
	)	
Service Rules for Advanced Wireless Services in the 1915-1920 MHz, 1995-2000 MHz, 2020-2025 MHz, and 2175-2180 MHz Bands	)	WT Docket No. 04-356 (Proceeding Terminated)
	)	
Applications for License and Authority to Operate in the 2155-2175 MHz Band	)	WT Docket No. 07-16 (Proceeding Terminated)
	)	
Petitions for Forbearance Under 47 U.S.C. § 160	)	WT Docket No. 07-30 (Proceeding Terminated)

REPLY COMMENTS OF T-MOBILE USA, INC.

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October 28, 2013

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REPLY COMMENTS OF T-MOBILE USA, INC.

T-Mobile USA, Inc. ("T-Mobile")[1/] submits these reply comments in response to the comments submitted by other parties in the above-referenced proceeding,[2/] which proposes to make spectrum available in the 1695-1710 MHz, 1755-1780 MHz, 2020-2025 MHz, and 2155-2180 MHz bands for Advanced Wireless Services ("AWS") (together, the "AWS-3 bands"). The record shows broad support for clearing the AWS-3 spectrum to the maximum extent feasible and auctioning it on a paired basis. T-Mobile urges the Commission to quickly make the

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1/ T-Mobile USA, Inc. is a wholly-owned subsidiary of T-Mobile US, Inc., a publicly traded company.

2/ *See Amendment of the Commission's Rules with Regard to Commercial Operations in the 1695-1710 MHz, 1755-1780 MHz, and 2155-2180 MHz Bands, et al.*, Notice of Proposed Rulemaking and Order on Reconsideration, GN Docket No. 13-185, *et al.*, FCC 13-102 (rel. July 23, 2013) ("*NPRM*"). Due to the unavailability of online Commission resources during the recent government shutdown, the Commission extended the reply comment deadline in this proceeding to October 28, 2013. *See Revised Filing Deadlines Following Resumption of Normal Commission Operations*, Public Notice, DA 13-2025, at 5-6 (rel. Oct. 17, 2013).

AWS-3 spectrum available in order to continue to fuel the economic growth generated by the nation's rapidly-growing use of wireless broadband capacity.

I. INTRODUCTION AND SUMMARY

Commenters join T-Mobile in applauding the Commission's efforts to make more spectrum available for commercial mobile broadband.[3/] As the comments demonstrate, wireless providers need additional spectrum to satisfy the skyrocketing demand by consumers and businesses for wireless services.[4/] The Telecommunications Industry Association ("TIA") "projects that the overall wireless market, including voice and data services, wireless handsets,

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3/ *See, e.g.*, Comments of T-Mobile, GN Docket No. 13-185, at i (filed Sept. 18, 2013) ("T-Mobile Comments); Comments of AT&T Inc., GN Docket No. 13-185, at 1 (filed Sept. 18, 2013) ("AT&T Comments") ("AT&T supports the FCC's efforts to make additional spectrum available for commercial, licensed mobile broadband services."); Comments of Verizon Wireless, GN Docket No. 13-185, at 1 (filed Sept. 18, 2013) ("Verizon Comments") ("The Commission's [*NPRM*] is a major step toward making available significantly more commercial spectrum for Advanced Wireless Services (AWS) and achieving Congress' mandate in the Middle Class Tax Relief and Job Creation Act to license spectrum for commercial mobile use."); Comments of Competitive Carriers Association, GN Docket No. 13-185, at 1 (filed Sept. 18, 2013) ("CCA Comments") ("CCA strongly supports the Commission's efforts to unleash additional spectrum for commercial mobile wireless services."); Comments of Motorola Mobility LLC, GN Docket No. 13-185, at 1 (filed Sept. 18, 2013) ("Motorola Comments") ("Motorola Mobility supports the Commission's ongoing efforts to make spectrum available to address the ever-growing demand for wireless broadband services . . ."); Comments of the GPS Innovation Alliance, GN Docket No. 13-185, at 1 (filed Sept. 18, 2013) ("GPSIA Comments") ("The GPSIA . . . commends the Commission's ongoing efforts to identify new sources of spectrum that can meet 'skyrocketing demand for mobile services,' of which this proceeding is an important part."); Comments of The Boeing Company, GN Docket No. 13-185, at 2 (Sept. 18, 2013) ("Boeing Comments") ("Boeing recognizes the importance of providing adequate spectrum for commercial wireless operations to keep pace with the demand for mobile service, and generally supports the Commission's proposals for the [AWS-3 bands]."); Comments of Comsearch, GN Docket No. 13-185, at 1 (filed Sept. 18, 2013) ("Comsearch Comments") ("We believe this NPRM is a significant step to address the burgeoning need for more spectrum in bands that generally harmonize with international allocations."); Comments of Mobile Future, GN Docket No. 13-185, at 2 (filed Sept. 18, 2013) ("Mobile Future Comments") ("Introducing the AWS-3 spectrum into the mobile marketplace will spur innovation and job creation and help ensure that the United States retains its leadership role in the global wireless economy.").

4/ *See, e.g.*, Comments of Nokia Solutions and Networks, GN Docket No. 13-185, at 4 (Sept. 18, 2013) ("Nokia Comments") ("[D]emand for mobile broadband connectivity continues to increase dramatically with no end in sight. This of course is putting a corresponding amount of strain on mobile networks."); Verizon Comments at 1-2 (discussing a recent Pew Research Center report showing that more than two-thirds of cell phone owners use them to go online, more than double the percentage that did so in 2009) (internal citation omitted).

wireless infrastructure equipment, and services in support of the wireless infrastructure, will expand at a 7.6 percent compound annual rate, reaching an estimated $364.5 billion in 2016 from $272.3 billion in 2012."[5/] T-Mobile agrees with Verizon that "[m]aximizing the amount of newly-licensed mobile broadband spectrum through the AWS-3 auction is an essential component of the Federal government's policy of achieving the economic benefits and the transformative capabilities of wireless technologies and services."[6/]

Commenters also agree that the AWS-3 auction presents the Commission with the opportunity to create an allocation that maximizes the value and utility of the spectrum. As AT&T explained, "the Commission has before it a rare opportunity – to take the bits and pieces of spectrum Congress has required it to assign, and combine them in a band plan that would not only help to address the spectrum crunch, but do so in a way that speeds the deployment of service in this spectrum, promotes competition, and maximizes the utility and value of this spectrum to the public."[7/]

The potential for the AWS-3 bands to extend existing commercial allocations – from 1695 to 1780 MHz and from 2110 to 2200 MHz – is particularly promising, because "[t]hese wide, uniform allocations will allow carriers to effectively integrate the spectrum into their existing networks, and could also facilitate the development and deployment of wider bandwidth applications, such as those that will be available in future evolutions of today's 4G mobile broadband technologies."[8/]

5/ Comments of the Telecommunications Industry Association, GN Docket No. 13-185, at 4 (filed Sept. 18, 2013) ("TIA Comments") (internal citation omitted).

6/ Verizon Comments at 3.

7/ AT&T Comments at 2; *see also* TIA Comments at 5 ("Priority should be placed on allocations of wide, contiguous blocks of spectrum.").

8/ Motorola Comments at 3 (internal citation omitted); *see also* Comments of United States Cellular Corporation, GN Docket No. 13-185, at 3-4 (filed Sept. 18, 2013) ("USCC Comments") ("[T]he proposed

However, in order to realize the full potential of the AWS-3 spectrum, T-Mobile and other parties agree that it must be cleared to the maximum extent possible and auctioned on a paired basis.[9/] The Department of Defense's ("DoD's") plan to make the 1755-1780 MHz band available for commercial use in the near term while protecting critical federal operations will facilitate this process.

In addition, there is consensus that the 1755-1780 MHz band should be paired with the 2155-2180 MHz band. Parties likewise generally agree that the 1695-1710 MHz band should be offered on a paired basis. However, there are challenges associated with finding an appropriate band for pairing with 1695-1710 MHz. If an appropriate candidate cannot be identified in time to meet the Congressionally-mandated deadline to auction the AWS-3 spectrum, the FCC should request a brief delay to conduct the auction for the 1695-1710 MHz band until it can be licensed on a paired basis. Studying additional bands that may be repurposed for commercial use and adopting other refinements to the FCC's proposed technical, licensing, and operational rules as discussed below would help ensure that the AWS-3 spectrum resources will be best used to generate additional economic growth through business and consumer use of wireless broadband capacity.

AWS-3 spectrum likely can be put to use more cost-effectively than most newly-auctioned spectrum because of its adjacency to the AWS-1 bands."); Mobile Future Comments at 13 ("Spectrum contiguity offers network design synergies and handset design benefits. Large blocks of contiguous spectrum are ideally suited for LTE service, enabling carriers to achieve higher peak throughput and greater overall capacities.").

9/ *See, e.g.*, Comments of CTIA – The Wireless Association, GN Docket No. 13-185, at 8 (filed Sept. 18, 2013) ("CTIA Comments") ("[T]he first step for the Commission should be to focus on a holistic band plan that best pairs and licenses spectrum for mobile broadband services."); Mobile Future Comments at 4 (stating that the "FCC can create an effective band plan for AWS-3 if it pairs these spectrum assets to take advantage of technological synergies and global spectrum harmonization efforts").

II. COMMENTERS AGREE THAT THE AWS-3 SPECTRUM MUST BE CLEARED TO THE GREATEST EXTENT POSSIBLE

In its comments, T-Mobile noted the Spectrum Act's preference for relocation of federal operations over sharing with them,[10/] and the *NPRM*'s parallel commitment to clearing spectrum in the AWS-3 band for exclusive commercial use to the maximum extent feasible.[11/] The vast majority of commenters agree that the Commission should undertake a thorough analysis of ways to clear the AWS-3 spectrum.[12/]

While it is plain that the Commission must fully consider options for clearing the AWS-3 spectrum before it resorts to spectrum sharing approaches, the efforts of the Commerce Spectrum Management Advisory Committee ("CSMAC") established by the National Telecommunications and Information Administration ("NTIA") have been more focused on sharing the 1755-1780 MHz band.[13/] While sharing may be necessary in some instances, either temporarily or

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10/ *See* Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, 126 Stat. 156 (2012), codified at 47 U.S.C. § 1401 *et seq.* ("Spectrum Act") ("In evaluating a band of frequencies for possible reallocation for exclusive non-Federal use or shared use, the NTIA shall give priority to options involving reallocation of the band for exclusive non-Federal use and shall choose options involving shared use only when it determines . . . that relocation of a Federal entity from the band is not feasible because of technical or other cost constraints.").

11/ *NPRM* ¶¶ 1, 27; T-Mobile Comments at 8.

12/ *See, e.g.*, Comments of 4G Americas, GN Docket No. 13-185, at 6 (filed Sept. 18, 2013) ("4G Americas Comments") ("As the Commission notes, the Spectrum Act *requires* relocation of federal systems from evaluated spectrum if feasible.") (emphasis in original); AT&T Comments at 2 ("Congress' clear directive is that federal spectrum reallocated for commercial mobile use should be cleared of incumbent federal uses, if it is at all possible to do so."); Comments of Ericsson, GN Docket No. 13-185, at 3 (filed Sept. 18, 2013) ("Ericsson Comments") ("[T]he Commission's goal should be the auction of exclusively licensed spectrum."); Verizon Comments at 6 (urging the FCC to work with NTIA "to ensure as many federal systems as possible are relocated from the 1755-1780 MHz band into other spectrum bands or truncated above 1780 MHz"); USCC Comments at 4 (strongly supporting the Commission's goal to clear the AWS-3 bands to the greatest extent possible); Mobile Future Comments at 4 ("The FCC should coordinate with NTIA to clear federal operations from the 1755-1780 MHz portion of the 1755-1850 MHz band to the maximum extent possible.").

13/ *See, e.g.*, 4G Americas Comments at 6-7 (discussing that CSMAC should have evaluated clearing proposals); AT&T Comments at 9 (discussing that "NTIA did not evaluate the possibility of exclusive non-Federal use of the 1755-1780 MHz band").

permanently, "clearing must remain the objective and priority."[14/] Where sharing is necessary, the CSMAC analysis is overly conservative and must be refined prior to serving as the basis for any sharing arrangements.

The Commission's "overlay" licensing proposal – which would permit new licensees to gain access to the 1755-1780 MHz band only if they are able to reach coordination agreements with affected federal users – overlooks the statutory preference for relocation.[15/] The few commenters addressing the "overlay" proposal agree. As AT&T discussed, "[i]t would be premature to adopt any 'overlay license' regime unless and until it is determined that clearing the spectrum for commercial use for relocation, as Congress directs, is not feasible, and that mutually acceptable sharing mechanisms cannot be adopted."[16/] An "overlay" approach would also depress auction revenues due to uncertainty regarding AWS-3 licensees' rights and inhibit deployment of the spectrum due to uncertainty and potential delays associated with reaching acceptable coordination arrangements.[17/]

III. THERE IS BROAD SUPPORT FOR PAIRING 1755-1780 MHZ WITH 2155-2180 MHZ

A. Commenters Agree with T-Mobile That Pairing the 1755-1780 MHz and 2155-2180 MHz Bands Will Create Significant Benefits.

As the Commission and other commenters have noted, T-Mobile has advocated – through submission of the *Industry Roadmap* and otherwise – for reallocation of the 1755-1780 MHz

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14/ Nokia Comments at 3; *see also* Ericsson Comments at 5 ("The priority stated in the *Spectrum Act* for exclusive use spectrum over shared spectrum is clear and additional efforts are needed to reallocate spectrum for commercial use.").

15/ T-Mobile Comments at 19.

16/ AT&T Comments at 10.

17/ *See* T-Mobile Comments at 20; AT&T Comments at 10; 4G Americas Comments at 10.

band to commercial wireless use and pairing of that band with the 2155-2180 MHz band.[18/] This proposed pairing was one of the most widely discussed and uniformly supported proposals among commenters.[19/] For instance, Verizon discussed that the pairing "will conform the new spectrum to a band plan that is compatible with existing AWS-1 spectrum," resulting in expansion of the AWS band by 50 MHz to a total of 140 MHz.[20/] Verizon further noted that this approach "will make substantial spectrum available for new entrants and allow existing licensees to leverage the investments already being made in AWS-1, thereby creating greater economies of scale and lower-cost equipment as well as reducing the risk of harmful interference."[21/]

18/ *See, e.g., Industry Roadmap to Assessing the 1755-1850 MHz Band* ("*Industry Roadmap*"), *attached to* Letter from Steve Sharkey, T-Mobile, to Marlene H. Dortch, Secretary, FCC, ET Docket No. 10-123, WT Docket No. 07-195 (filed June 24, 2013); *NPRM* ¶¶ 22, 33 (discussing T-Mobile's submission of the *Industry Roadmap*); USCC Comments at 8-11; Mobile Future Comments at 6.

19/ *See, e.g.*, Motorola Comments at 4 ("[T]he centerpiece of the Notice is the potential pairing of the 1755-1780 MHz and 2155-2180 MHz band segments. Because of its international harmonization and adjacency to the current AWS-1 band, Motorola Mobility and others in the industry have long urged the Commission to make this particular spectrum pairing available, and it should be the focus of the Commission's efforts in this proceeding."); CTIA Comments at 10 (noting the many benefits of this pairing "and the widespread support for it"); TIA Comments at 10 ("TIA supports pairing 1755-1780 MHz with 2155-2180 MHz . . ."); CCA Comments at 3 ("The Commission's top priority with respect to the AWS-3 spectrum should be to clear the 1755-1780 MHz band, so that it can be paired for auction with the 2155-2180 MHz band."); AT&T Comments at 6 ("The adoption of a band plan pairing 1755-1780 MHz with 2155-2180 MHz . . . would facilitate the aggregation of contiguous spectrum for highly efficient, wide channel deployment of LTE."); 4G Americas Comments at 3-5 (expressing support for this pairing proposal); Mobile Future Comments at 8-9 ("This pairing offers significant synergies and is broadly supported by the wireless industry."); USCC Comments at 11 ("USCC strongly endorses the broadly-supported industry proposal filed by T-Mobile to pair the 1755-1780 MHz band with the 2155-2180 MHz band . . ."); Nokia Comments at 3 ("NSN in particular strongly supports the pairing, auctioning and licensing of the 1755-1780 MHz and 2155-2180 MHz bands in order to help meet the constantly escalating demand for additional spectrum needed to support bandwidth intensive commercial mobile broadband services in the United States."); Verizon Comments at 5 (advocating for pairing 1755-1780 MHz with 2155-2180 MHz).

20/ Verizon Comments at 5; *see also* CTIA Comments at 10 ("AWS-1 spectrum is directly adjacent to this potential pairing, and it would serve as a logical extension of the AWS-1 band. A pairing of these two spectrum bands would continue to build upon the current AWS-1 allocation and allow for the seamless integration of this spectrum for use by mobile broadband providers for wireless services."); USCC Comments at 12 (discussing the benefits of this pairing that will be derived by extension of existing AWS spectrum allocations).

21/ Verizon Comments at 5.

CTIA – The Wireless Association ("CTIA") noted that by adding to the adjacent AWS-1 spectrum, and therefore providing for wider channels, "this spectrum would become ideally suited for LTE-Advanced and the innovations and data speeds it enables."[22/] Comments also explained how this pairing would achieve international harmonization, which in turn enhances international roaming, creates economies of scale that lowers device costs, speeds deployment, and reduces interference potential near international borders.[23/] Auctioning the 1755-1780 MHz band paired with the 2155-2180 MHz band will enhance the value of this spectrum, driving greater auction revenues and funding for FirstNet.[24/]

B. T-Mobile Joins Other Parties in Applauding the Department of Defense's Leadership in Presenting a Path Forward for the 1755-1780 MHz Band.

T-Mobile's comments stated its support of the *DoD Proposal* – which offers a solution "to make the 1755-1780 MHz band available for auction in the near-term, while protecting critical capabilities"[25/] – as a "thoroughly evaluated solution, 'considering the myriad of technical, statutory, and other factors involved.'"[26/] Other parties generally agree, identifying the *DoD Proposal* as "a significant breakthrough that provides a framework for progress."[27/]

22/ CTIA Comments at 10-11.

23/ *See, e.g.*, Verizon Comments at 5-6; Mobile Future Comments at 9; CTIA Comments at 11; TIA Comments at 7; AT&T Comments at 7; USCC Comments at 12.

24/ *See, e.g.*, CTIA Comments at 11-12; AT&T Comments at 7; USCC Comments at 13.

25/ Letter from Teresa M. Takai, Chief Information Officer, Dep't of Defense, to Lawrence E. Strickling, Assistant Secretary for Communications and Information, NTIA, U.S. Dept. of Commerce, at 1 (July 17, 2013) ("*DoD Proposal*"), *attached to* Letter from Karl B. Nebbia, Associate Administrator, Office of Spectrum Management, NTIA, to Julius P. Knapp, Chief, Office of Engineering and Technology, FCC, GN Docket No. 09-51, ET Docket No. 10-123 (filed July 22, 2013).

26/ T-Mobile Comments at 15 (*quoting DoD Proposal* at 1).

27/ 4G Americas Comments at 3; *see also* AT&T Comments at 8 ("AT&T welcomes the [DoD's] constructive proposals designed to make 1755-1780 MHz available for auctioning and licensing in the near term."); Ericsson Comments at 19 (stating that DoD's plan "is a positive development that Ericsson believes is crucial in the development of the 1755-1780 MHz band for commercial broadband services"); Mobile Future Comments at 6 (noting that the *DoD Proposal* "provides a clear path between the wireless sector and federal government agencies on spectrum transition issues"); CTIA Comments at 22 ("CTIA is

Several commenters discuss that additional work to implement DoD's proposal is necessary.[28/] T-Mobile agrees, but does not believe that the additional work should delay auction of the spectrum. One of the areas of further analysis identified by T-Mobile and other commenters involves DoD's relocation plans for the band.[29/] Like other parties, T-Mobile requests that DoD operations be relocated to "spectrum bands that do not have potential for future commercial use," to the extent technologically and economically feasible.[30/] T-Mobile is encouraged by DoD's active engagement in preparing the 1755-1780 MHz band for commercial use and believes that continued cooperation will lead to relocation and sharing solutions acceptable to all interested stakeholders.

C. T-Mobile Agrees with Other Commenters That the Sharing Approach for the 1755-1780 MHz Band Needs Further Study and Refinement.

Commenters agree that CSMAC's study of sharing in the 1755-1780 MHz band was based on unrealistic, conservative assumptions and must be revisited.[31/] 4G Americas noted that "propagation models developed years ago were used based on theoretical inputs," and that improvements to CSMAC's sharing analysis for the 1755-1780 MHz band should be made "to

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generally supportive of DoD's proposal for spectrum relocation and sharing in the 1755-1780 MHz band."); Nokia Comments at 7-8 (noting that the *DoD Proposal* is a development that demonstrates "unmistakable" progress); Letter from Ali Bahrami, Vice President, Civil Aviation, Aerospace Industries Association ("AIA"), to Acting Chairwoman Mignon L. Clyburn, FCC, at 3 (filed Sept. 18, 2013) ("AIA Comments") (supporting the DoD's "roadmap to ensure the reliability of critical systems").

28/ *See, e.g.*, AT&T Comments at 8 ("While DoD's proposals represent real progress, additional refinements and analysis are likely required."); CTIA Comments at 22 ("CTIA believes that [the *DoD Proposal*] presents certain complexities and challenges that will require further effort from all interested stakeholders.").

29/ *See, e.g.*, T-Mobile Comments at 15-16; Mobile Future Comments at 7; AT&T Comments at 8-9; CTIA Comments at 23.

30/ *See, e.g.*, Mobile Future Comments at 7; T-Mobile Comments at 15-16; AT&T Comments at 8-9.

31/ *See, e.g.*, 4G Americas Comments at 7; TIA Comments at 8; T-Mobile Comments at 17-19; CTIA Comments at 24.

better reflect operating characteristics of LTE technology."[32/] TIA discussed that "additional efforts should be initiated that would greatly mitigate the protection zones for Federal operations, including, but not limited to, considering other effects such as clutter, more reasonable interference protection limits and considering a more representative LTE system model."[33/] Other parties noted additional matters that remain to be considered that will affect spectrum sharing between federal and non-federal systems.[34/]

The "trusted agent" process initiated by NTIA, which provides a mechanism for the sharing of classified or sensitive data with designated industry representatives, will facilitate an improvement over CSMAC's previous analyses.[35/] Better information-sharing between the government and industry should lead to solutions for reducing the size of Protection Zones while protecting incumbent federal operations, with the ultimate goal of producing as much spectrum for commercial operations on an exclusive basis at 1755-1850 MHz as possible.

D. The Commission Should Not Adopt Oceus' Proposal for a Co-Primary Federal Allocation for LTE in the 1755-1780 MHz and 2155-2180 MHz Bands.

Oceus Networks, Inc. ("Oceus") proposes that the FCC and NTIA grant DoD a primary allocation for the 1755-1780 MHz and 2155-2180 MHz bands for military use of tactical LTE on

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32/ 4G Americas Comments at 7.

33/ TIA Comments at 8-9; *see also* Comsearch Comments at 4-5 (strongly suggesting "that [parameters including improved propagation models, the use of clutter, antenna discrimination, operational time frames and interference protection criteria] should be studied as recommended by the [CSMAC Working Groups], that consensus be reached on an appropriate approach to apply to all Protection Zone analyses, and that all Zones be re-analyzed with any changed parameters or methodologies"); Verizon Comments at 6-7 (discussing the need for further analysis relating to the proposed Protection Zones for the 1755-1780 MHz band).

34/ *See, e.g.*, Comsearch Comments at 1 ("[T]here is still much work to do to ensure commercial systems can operate on a shared basis with Federal incumbents."); AIA Comments at 2 (stating that "there are still critical issues that need to be decided by the FCC and [NTIA] to ensure that the existing capabilities of the federal users will not be impaired or degraded . . ."); Nokia Comments at 10-13 (discussing CSMAC Working Group 5 follow-up items).

35/ *See, e.g.*, T-Mobile Comments at 19; TIA Comments at 9; CTIA Comments at 24.

geographically remote military bases and training ranges.[36/] The Commission should reject this proposal.

First, a co-primary federal allocation strays from the goal of designating additional spectrum for commercial use. In particular, Oceus' proposal is contrary to Administration and Congressional instructions to the FCC and NTIA to cooperate in repurposing spectrum for commercial use and the strong Congressional and Commission preference for relocation over sharing.[37/]

Adoption of Oceus' proposal for a co-primary federal allocation in the AWS-3 bands would inhibit the maximum use of the spectrum for commercial operations and depress auction revenues. While T-Mobile is not opposed to federal use of non-federal spectrum in areas where wireless providers are not providing service, it is premature for the Commission to adopt sharing rules for commercial bands at this time.[38/] The focus of the AWS-3 proceeding is to make additional spectrum available for much-needed commercial wireless broadband capacity. Particularly given the challenges associated with developing feasible spectrum sharing arrangements, the Commission should continue to press ahead on its current path without muddying the waters by introducing proposals for additional federal use of the AWS-3 spectrum. The process of auctioning and licensing the AWS-3 spectrum will likely provide additional insight regarding federal spectrum use and future needs, which will be helpful in informing future consideration of federal sharing proposals. In the interim, subject to appropriate

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36/ *See* Comments of Oceus Networks, Inc., GN Docket No. 13-185, at 12-14 (filed Sept. 18, 2013) ("Oceus Comments").

37/ *See, e.g.*, *Unleashing the Wireless Broadband Revolution*, 75 Fed. Reg. 38385, 38388 (July 1, 2010) ("*2010 Presidential Memorandum*"); *Expanding America's Leadership in Wireless Innovation*, 78 Fed. Reg. 37431, 37431 (June 20, 2013) ("*2013 Presidential Memorandum*"); Spectrum Act § 923(j)(1); *NPRM* ¶ 1.

38/ T-Mobile Comments at 24-25.

regulatory approvals, the Commission's rules governing secondary market transactions (including leasing, partitioning and disaggregating) provide opportunities for federal users to gain access to the spectrum.[39/]

In any event, Oceus' proposal for a co-primary federal AWS-3 allocation is simply an attempt to tailor use of the band to its particular business model. As a manufacturer of LTE equipment for federal users,[40/] Oceus stands to benefit from additional federal use of this spectrum.

While Oceus' proposal may be rejected on these grounds alone, the Commission should also dismiss the proposal because it is based on false premises. Oceus suggests that AWS-3 spectrum be available for federal use in "remote areas," asserting that there will be limited commercial need for the spectrum in those areas.[41/] In order to determine which military bases or training ranges should be deemed "remote," and thus eligible for shared access, Oceus recommends using the FCC's "baseline" definition for rural service areas, which is defined as any county with a population density of 100 persons or fewer per square mile.[42/] However, counties in rural service areas comprise 3.1 million square miles, or 86 percent of the geographic area of the United States, and 19 percent of the U.S. population lives on 85 percent of the land.[43/] Accordingly, roughly 60 million people live in the areas that would be deemed "remote." Oceus is wrong, therefore, when it assumes that carriers will not require use of spectrum in such a broad

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39/ *See, e.g.*, CTIA Comments at 25 ("CTIA would support use of voluntary secondary market agreements (spectrum leasing agreements) as a way to potentially allow access to spectrum for Federal entities.").

40/ Oceus Comments at 2 ("Oceus . . . is a provider of 4G, LTE-based wireless broadband solutions for Federal and public safety customers, including for DoD tactical uses.").

41/ *Id.* at 13-14.

42/ *Id.* at 13.

43/ *Id.*

area of the county and its proposal is clearly at odds with the intended commercial use of the AWS-3 spectrum.

IV. THE FCC SHOULD AUCTION THE 1695-1710 MHZ BAND ON A PAIRED BASIS, EVEN IF IT MEANS SEEKING A BRIEF DELAY IN THE AUCTION

Commenters agree with T-Mobile that the 1695-1710 MHz band has limited value as an uplink-only band.[44/] As Verizon discussed, auctioning this band as stand-alone uplink spectrum would render it "virtually useless, as it is the downlink spectrum that carriers, both new and incumbent, most require to meet the skyrocketing demand for mobile broadband bandwidth."[45/] By contrast, the 1695-1710 MHz band has significant value if it can be auctioned on a paired basis. Pairing the spectrum would allow aggregation of AWS-3 spectrum with AWS-1 spectrum. This would boost auction participation, provide for the creation of a single band class, internationally harmonize the spectrum, and result in significant economies of scale.[46/]

Many commenters observe that the 2095-2110 MHz band could be paired with the 1695-1710 MHz band.[47/] As the Competitive Carriers Association ("CCA") explained, the 2095-2110 MHz band is "ideally suited for mobile broadband services, is contiguous and adjacent to existing allocations, and is the most efficient candidate for pairing with the 1695-1710 MHz band."[48/] Verizon likewise noted that adopting this pairing "could ultimately lead to a unified

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44/ *See, e.g.*, T-Mobile Comments at 12 ("[T]he band's usefulness for commercial operations will be significantly undermined if it is not paired."); TIA Comments at 12 (noting that the option of auctioning 1695-1710 MHz as a stand-alone uplink band "would make very inefficient use of this block of spectrum," because the "current demand and expected future demand is for additional downlink spectrum . . ."); AT&T Comments at 7 (discussing that a bidder would be unlikely to bid on separate shards of unpaired spectrum that each might require its own standard as part of a carrier aggregation combination).

45/ Verizon Comments at 4-5.

46/ *See, e.g.*, AT&T Comments at 7; TIA Comments at 10; Verizon Comments at 7-8; T-Mobile Comments at 13.

47/ *See, e.g.*, CTIA Comments at 12-14; USCC Comments at 16; Mobile Future Comments at 12-13; Ericsson Comments at 11; TIA Comments at 11; T-Mobile Comments at 12.

48/ CCA Comments at 6.

band plan for the 2 GHz spectrum: 1695-1920 MHz for uplink operations and 1930-2200 MHz for downlink operations."[49/]

However, the record has revealed challenges associated with this pairing. Incumbent federal satellite and non-federal Broadcast Auxiliary Service ("BAS") operations currently use the 2095-2110 MHz band.[50/] DoD also has proposed the use of the 2095-2110 MHz band for relocation from 1755-1780 MHz, although T-Mobile and other commenters urge limited relocation of DoD's systems to 2095-2110 MHz.[51/]

Because of the importance of auctioning the 1695-1710 MHz band on a paired basis and the difficulties associated with finding an appropriate pairing candidate, the process of identifying spectrum to pair with 1695-1710 MHz may require more time than the deadline for auctioning the AWS-3 spectrum permits. Consequently, the FCC should consider seeking a brief delay from Congress for auction of the 1695-1710 MHz band if paired spectrum cannot be identified and made available within the Congressionally-mandated timeframe.[52/]

49/ Verizon Comments at 7-8.

50/ *See, e.g.*, Comments of the National Association of Broadcasters, GN Docket No. 13-185 (filed Sept. 18, 2013) (discussing BAS operations currently using the 2025-2110 MHz band); Comments of Raytheon Company, GN Docket No. 13-185, at 39 (filed Sept. 18, 2013) ("Raytheon Comments") (arguing that 2025-2110 MHz should not be made available to non-federal users due to the existing federal uses of the band); Boeing Comments at 2-5 (discussing use of the 2025-2110 MHz band for Tracking and Data Relay Satellite Service ("TDRSS") operations).

51/ *See, e.g.*, T-Mobile Comments at 15-16; AT&T Comments at 8 ("[R]elocation of government systems to 2095-2110 MHz should not be considered at all."); Ericsson Comments at 19-20 (discussing that DoD's "proposed relocation to 2025-2110 MHz would likely impact the pairing of 1695-1710 MHz with 2095-2110 MHz," and therefore encouraging the Commission to investigate the potential to accommodate federal operations in the 2025-2095 MHz band so that 2095-2110 MHz can be left available for commercial services); Comments of Engineers for the Integrity of Broadcast Auxiliary Services Spectrum, GN Docket No. 13-185 (filed Sept. 18, 2013) (raising concerns regarding additional sharing of the 2095-2110 MHz band between existing BAS operations and potentially relocated DoD systems).

52/ T-Mobile Comments at 13; *see also* TIA Comments at 11 ("To the extent that complexities in the other bands under consideration may delay action, the Commission should consider bringing the 1755-1780/2155-2180 MHz band to market first.").

A delay would permit the Commission additional time to find spectrum to pair with the 1695-1710 MHz band. While the Commission should broadly examine any bands that may have the potential to be paired with this spectrum, one possible candidate may be the 1370-1390 MHz band. While there are technical limitations that weigh against the use of the band,[53/] it may be the best alternative available today. In any case, the Commission must make identifying a suitable pair for the 1695-1710 MHz band a priority.

NTIA has prioritized consideration of the 1370-1390 MHz band "for repurposing to wireless broadband systems for FCC-licensed non-federal use and non-federal (licensed or unlicensed)/federal sharing use."[54/] NTIA also recently released a report showing the results of monitoring activity in the Denver area in spectrum bands between 108 MHz and 10 GHz.[55/] That study discusses that the general utilization of the larger 1215-1400 MHz band includes such varied uses as GPS, Wide Area Augmentation Systems ("WAAS"), high-power long-range surveillance radars, Federal Aviation Administration ("FAA") operated air-route surveillance radars ("ARSR"), balloons for drug interdiction, synthetic aperture radars ("SARs"), shipborne radars, radio astronomy research, remote sensing, and fixed-mobile communication links,[56/] but that spectrum monitoring results suggest that the 1370-1390 MHz sub-band is only lightly

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53/ These matters include the lack of synergy with existing bands, thereby requiring additional base station amplifiers and antennas.

54/ NTIA, *Second Interim Progress Report on the Ten-Year Plan and Timetable*, at 8 (Oct. 2011), http://www.ntia.doc.gov/files/ntia/publications/second_interim_progress_report_on_the_ten_year_plan_and_timetable.pdf (Table 2-3 Prioritization Results for Repurposing Federal and Shared Spectrum Bands).

55/ Chriss Hammerschmidt, Heather E. Ottke, and J. Randy Hoffman, NTIA, *Broadband Spectrum Survey in the Denver Area*, NTIA Report TR-13-496 (Aug. 2013), *available at* http://www.its.bldrdoc.gov/publications/2735.aspx.

56/ *Id.* at 126.

used.[57/] The Commission should therefore further evaluate the potential use of this band while, at the same time, also exploring if there are other more optimal pairing options.

Regardless of when and how the 1695-1710 MHz band is made available, other commenters agree with T-Mobile that CSMAC's sharing proposal for the band should be adopted.[58/] Commenters discussing the proposed sharing framework agree that the use of Protection Zones, rather than Exclusion Zones, achieves the right balance of maximizing use of the spectrum while protecting government operations.[59/] Commenters also agree that while the sharing approach seems workable, further study of the Protection Zone limits is necessary because "additional reductions remain possible," noting that "[c]ontinuing to shrink Protection Zones – while enhanc[ing] appropriate safeguards for federal receivers – will increase the utility of the 1695-1710 MHz band to the benefit of consumers in major markets with existing federal operations, such as Miami, Florida, St. Louis, Missouri, and Sacramento, California, among others."[60/]

V. COMMENTERS AGREE THAT ADDITIONAL SPECTRUM SHOULD BE EVALUATED FOR COMMERCIAL MOBILE BROADBAND USE

A. 1780-1850 MHz

Parties agree with T-Mobile that the 1780-1850 MHz band requires further study. As CTIA notes, "sharing and/or relocation studies for the 1780-1850 MHz band should continue in accordance with Federal requirements and should take into account the long term evolution of available technology . . . The extended timeline for the 1780-1850 MHz spectrum would allow

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57/ *Id.* at 82.

58/ *See, e.g.*, T-Mobile Comments at 10; Ericsson Comments at 10; AT&T Comments at 10-11; Mobile Future Comments at 10.

59/ *See, e.g.*, T-Mobile Comments at 10; AT&T Comments at 10-11; Mobile Future Comments at 10.

60/ Mobile Future Comments at 11; *see also* T-Mobile Comments at 11; AT&T Comments at 10-11; Ericsson Comments at 10-11.

Federal agencies to continue to have access to this spectrum while discussions continue."[61/] Continued evaluation of this band is also consistent with the Presidential memoranda calling for NTIA and the FCC to collaborate to open additional federal spectrum for commercial operations.[62/]

B. 2020-2025 MHz

As T-Mobile and others discussed in their comments, the Commission may wish to evaluate how best to use the 2020-2025 MHz band.[63/] However, the future use of the 2020-2025 MHz band is uncertain until DISH decides whether it will be using the adjacent spectrum for uplink or downlink operations.[64/] Until that time, it is premature to consider whether it may be used to support commercial wireless operations.

C. 2025-2110 MHz

As it continues to consider the future use of the 2025-2110 MHz band, the Commission should ensure that studies related to that spectrum are accurate. In particular, several parties agree with T-Mobile that the compatibility study performed by the National Aeronautics and Space Administration ("NASA") evaluating the potential for sharing of the 2025-2110 MHz band between LTE systems and forward link transmissions from NASA geostationary Tracking

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61/ CTIA Comments at 20; *see also* CCA Comments at 5 (agreeing that "the spectrum across [the 1755-1850 MHz] band could be effectively used for commercial mobile voice and data services"); T-Mobile Comments at 20 ("T-Mobile strongly supports continued review of the rest of the 1755-1850 MHz band – the 1780-1850 MHz band – for long-term commercial use.").

62/ *See generally 2010 Presidential Memorandum*; *2013 Presidential Memorandum*.

63/ *See, e.g.*, T-Mobile Comments at 27; CTIA Comments at 18-19; Ericsson Comments at 24.

64/ *See, e.g.*, T-Mobile Comments at 27-28 (explaining that because the 2000-2020 MHz band is adjacent to the 2020-2025 MHz band, DISH changing the direction of the 2000-2020 MHz band to downlink operations would generally require that 2020-2025 MHz also be used for downlink operations); CTIA Comments at 18-19 n.43 (discussing that the Commission's consideration of the 2020-2025 MHz band must take into account DISH's waiver request); Ericsson Comments at 24 ("Ericsson is concerned that the Commission's proposed duplex direction of the 2020-2025 MHz band could create coexistence issues in the 2000-2020 MHz band depending on the outcome of the DISH waiver petition.").

and Data Relay Satellite System ("TDRSS") satellites requires reevaluation.[65/] For instance, Ericsson explained that NASA made certain assumptions – for example, those relating to the distribution of macro base stations, base station tilt, and CSMAC's analysis – that could have skewed the study's results, and therefore recommends further information-sharing and joint analysis between NASA and industry.[66/] CTIA similarly observed that the *NASA Study* relies on "many of the worst-case, conservative assumptions" included in the CSMAC process, which assume "a far greater number of LTE base stations, a more equal distribution of these base stations, and a higher overall power level than would be present in a real-world deployment."[67/] CTIA further noted that if the assumptions made in the *NASA Study* were accurate, one would expect observable interference to TDRSS satellite operations by AWS-1 base stations today, which is not the case.[68/]

Moreover, recent developments provide other reasons why the Commission should not rely on the initial *NASA Study*. Specifically, T-Mobile understands that NASA has made changes to its study as part of the World Radiocommunication Conference 2015 ("WRC-15") process. The changes demonstrate that the potential for interference from mobile broadband operations is less than originally contemplated. Consequently, the *NASA Study* continues to be refined and therefore must not be considered an impediment to further study of the use of the 2025-2110 MHz band.

65/ *See* T-Mobile Comments at 21-24; Verizon Comments at 8; CCA Comments at 6; CTIA Comments at 16-17; *see also* United States of America, *Feasibility Assessment for Accommodation of Mobile Broadband Long Term Evolution (LTE) Systems in the 2 025-2 110 MHz Band*, Document 4-5-6-7/170-E (July 16, 2013) ("*NASA Study*").

66/ Ericsson Comments at 14-18.

67/ CTIA Comments at 17.

68/ *Id.*

In any case, and as discussed above, relocation of DoD systems to the 2025-2110 MHz band from the 1755-1780 MHz band should be minimized and limited to those absolutely necessary. As T-Mobile stated in its initial comments, as many federal uses as possible – particularly hard-to-move systems – should be consolidated in the 1780-1850 MHz band, with relocation to 2025-2110 MHz used only in the absence of any viable alternatives.[69/]

VI. THE COMMISSION SHOULD ADOPT TECHNICAL RULES THAT ACHIEVE CONSISTENCY AND MAXIMIZE USE OF THE AWS-3 SPECTRUM

A. Commenters Agree That the Commission Should Reject the Proposal for an EIRP of 20 dBm for Mobile Units Operating in the 1695-1710 MHz and 1755-1780 MHz Bands.

Commenters generally supported the Commission's proposed technical rules, specifically advocating for adoption of regulations consistent with those applicable to the AWS-1 spectrum.[70/] Commenters, however, nearly uniformly rejected as too restrictive the Commission's proposal for an equivalent isotropically radiated power ("EIRP") limit of 20 dBm for mobile units operating in the 1695-1710 MHz and 1755-1780 MHz bands.[71/]

Commenters identified a number of flaws associated with adopting this limit. AT&T noted that the 20 dBm EIRP limit "would effectively require the adoption of a separate 3GPP standard for AWS-3."[72/] 3GPP standards are optimized for higher power user equipment than the levels the Commission proposes. Adoption of this limit therefore would unnecessarily

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69/ T-Mobile Comments at 25.

70/ *See, e.g.*, Mobile Future Comments at 9; Motorola Comments at 5; 4G Americas Comments at 12; TIA Comments at 10; AT&T Comments at 11; Verizon Comments at 23.

71/ *See, e.g.*, Motorola Comments at 6-7; AT&T Comments at 11-12; T-Mobile Comments at 31-32; Verizon Comments at 24; CTIA Comments at 26; Nokia Comments at 20; Ericsson Comments at 7; TIA Comments at 13. The only supporter of this power limit was Raytheon, although Raytheon stated that the power limit alone would be insufficient to validate continuing to use the proposed Protection Zones where AWS systems are not required to implement an LTE standard. Raytheon Comments at 20-21.

72/ AT&T Comments at 12.

complicate device development.[73/] T-Mobile also agrees with AT&T that any marginal reduction in Protection Zones that might accrue as a result of the low power limit is speculative and in any event would be outweighed by forcing the AWS-3 band to use a separate 3GPP standard.[74/] There is therefore no basis for adoption of the proposed lower power limit. If the Commission remains concerned that federal operations will not be adequately protected, it should impose additional coordination requirements as it did for AWS-1 licensees.[75/]

B. The Commission Should Not Mandate Use of the LTE Standard in the AWS-3 Spectrum as Proposed by Some Parties.

A few parties encourage the Commission to mandate use of the LTE standard in the AWS-3 spectrum.[76/] Raytheon Company ("Raytheon"), in particular, asserted that if the Commission declines to require use of LTE in the 1695-1710 MHz band, it should "establish *larger* Protection Zones to create an umbrella allowing for the use of other standards."[77/]

While T-Mobile, like other carriers, is implementing plans to deploy LTE, locking the industry into a particular technology indefinitely is not warranted. While LTE is currently the favored standard, it may be supplanted in the future. An LTE mandate would hamstring

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73/ *See, e.g.*, Motorola Comments at 9.

74/ AT&T Comments at 12.

75/ *See, e.g.*, Motorola Comments at 9; CTIA Comments at 26. Presumably concerned about interference from the use of the 1695-1710 MHz band (the band closest to spectrum used by GPS receivers), the GPS Innovation Alliance ("GPSIA") urged the Commission to reexamine its preliminary proposal to use an out-of-band emission ("OOBE") limit of 43 + 10 log10 (P) dB for AWS-3 device emissions into the 1559-1610 MHz GPS band and encouraged the Commission to convene a multi-stakeholder task group to determine how best to protect GPS reception from OOBE. GPSIA Comments at ii, 5-10. Inasmuch as the Commission may be required to delay licensing in the 1695-1710 MHz band until it finds suitable paired spectrum, *see supra* Section IV, GPSIA's proposals are premature.

76/ *See* AIA Comments at 3 (noting its concern with whether "spectrum sharing and coordination rules can be established when there is currently *no proposed requirement for AWS-3 licensees to comply with any particular industry standard* such as LTE") (emphasis in original); Raytheon Comments at 20.

77/ Raytheon Comments at 20 (emphasis in original).

innovation and development and be contrary to the Commission's policy to preserve technical flexibility and refrain from imposing technical standards.[78/]

C. T-Mobile Supports Interoperability in the AWS-3 Spectrum.

As discussed by T-Mobile in other proceedings and by at least one commenter in this proceeding, interoperability creates significant benefits.[79/] Interoperability can help facilitate the provision of wireless broadband services to rural and other underserved areas and also can "enhance economies of scale, expand roaming opportunities, and promote competition," leading to "greater investment and innovation and lower costs for consumers."[80/] Interoperability can also promote a global market for handsets. In contrast, the creation of custom-designed or "boutique" band classes reduces the availability, affordability, and portability of end-user equipment and delays the deployment of mobile broadband services.[81/]

Consequently, T-Mobile urges the Commission to assess whether it is technically feasible to support interoperability across the AWS-3 spectrum. Even if achieving interoperability across all the AWS-3 spectrum proves challenging, the Commission should consider an interoperability

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78/ *See, e.g., Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993 Annual Report and Analysis of Competitive Market Conditions With Respect to Mobile Wireless, Including Commercial Mobile Services*, Sixteenth Report, 28 FCC Rcd 3700, ¶ 120 (2013) (stating that "the Commission has adopted a general policy of providing licensees with significant flexibility to decide which services to offer and what technologies to deploy on spectrum used for the provision of mobile wireless services"); *Expanding Access to Broadband and Encouraging Innovation Through Establishment of an Air-Ground Mobile Broadband Secondary Service for Passengers Aboard Aircraft in the 14.0-14.5 GHz Band*, Notice of Proposed Rulemaking, 28 FCC Rcd 6765, ¶ 101 (2013) (stating that the Commission "strive[s] to establish technology neutral rules that allow for competing technologies and changes in technology over time without the need to change our rules").

79/ *See, e.g.*, USCC Comments at 16-27; Comments of T-Mobile US, Inc., WT Docket No. 13-135, at 22-23 (filed June 17, 2013) ("T-Mobile 17th Wireless Competition Report Comments"); Reply Comments of T-Mobile USA, Inc., WT Docket No. 13-135, at 18-19 (filed July 25, 2013) ("T-Mobile 17th Wireless Competition Report Reply Comments"); Comments of T-Mobile USA, Inc., GN Docket No. 12-268, at 21-22 (filed Jan. 25, 2013).

80/ USCC Comments at 16-17.

81/ *See* T-Mobile 17th Wireless Competition Report Comments at 23; T-Mobile 17th Wireless Competition Report Reply Comments at 19.

mandate at least for the 1755-1780 MHz band because this band, when paired with the 2155-2180 MHz band, aligns closely with 3GPP Band Class 10 and devices throughout the band would not be required to span multiple band classes.[82/]

VII. THE FCC SHOULD CONSIDER CERTAIN REFINEMENTS TO ITS PROPOSED LICENSING AND OPERATIONAL RULES

A. Performance Requirements

T-Mobile's initial comments noted its support of the Commission's proposed build-out requirements, but suggested that they take into consideration any protection or exclusion zones or other federal impediments to complete use of the auctioned spectrum. Other commenters echoed these concerns. Raytheon, for example, stated, "[t]here is no guarantee to a winning bidder for a license for which the authorized area includes all or part of a Protection Zone that the license will ever be able to operate within the Zone," and therefore "inclusion of Protection Zone populations may prove fundamentally unfair to licensees in cases where future coordination does not prove workable."[83/] United States Cellular Corporation ("USCC") similarly explained that "an AWS-3 licensee in either the 1695-1710 MHz or 1755-1780 MHz band will not be able to begin network deployment until the incumbent Federal users in these bands have been relocated or the Federal users have approved of the licensee's frequency coordination proposal."[84/] Consequently, the Commission should allow licensees to exclude the population residing within Protection Zones when they demonstrate whether they have satisfied

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82/ *See, e.g.*, Letter from Kris Rinne, Network Technologies SVP, AT&T Mobility; Chris Pearson, President, 4G Americas; Neville Ray, Chief Technology Officer, T-Mobile; Nicola Palmer, Chief Technology Officer, Verizon Wireless; and Steve Largent, President and CEO, CTIA-The Wireless Association, to Lawrence E. Strickling, Assistant Secretary, NTIA, at 1 (dated Apr. 24, 2013).

83/ Raytheon Comments at 38-39.

84/ USCC Comments at 53-54; *see also* AT&T Comments at 14 ("It will not be clear, until transition plans have been filed and approved, how long it might take for federal users to relocate out of the bands being reallocated for commercial use.").

their build-out requirements and should extend build-out deadlines for affected licensees in areas where federal government users are required to relocate.[85/]

T-Mobile and other commenters asserted that a separate "renewal" showing for AWS-3 licensees is unnecessary, costly, and unduly burdensome.[86/] As AT&T discussed, much of the information that the Commission proposes collecting for the renewal showing is already provided to the Commission or is readily available.[87/] T-Mobile also agrees with USCC that the "proposed renewal standards are ambiguous and overly subjective."[88/] Licensees meeting the final build-out requirement will have ample incentive to provide service in order to recoup their costs of spectrum acquisition, and thus should be given a renewal expectancy at the end of their license terms.

T-Mobile agrees with other commenters that the *NPRM*'s proposed penalty of automatic license termination for carriers that fail to meet final build-out requirements is unnecessarily harsh, as it "would risk cutting off service to customers who may already be using the spectrum [and] would risk stranding millions of dollars in investment in network deployment."[89/] Consequently, T-Mobile joins other commenters in supporting the adoption of a "keep what you use" rule – under which the license would terminate with respect to any unserved areas – as the

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85/ While a few parties advocate for license terms longer than 10 years in order to account for relocation issues affecting the spectrum, *see, e.g.*, USCC Comments at 54; AT&T Comments at 15, T-Mobile believes that an extended license term could depress deployment of the spectrum and therefore instead proposes modification of the build-out schedule on an as-needed basis. That approach will put spectrum to use where there are no incumbent operations rather than postponing generally when the spectrum will be used.

86/ *See, e.g.*, T-Mobile Comments at 33; AT&T Comments at 15; USCC Comments at 58.

87/ AT&T Comments at 33.

88/ USCC Comments at 58.

89/ CCA Comments at 9.

penalty for missing the final build-out deadline.[90/] A "keep what you use" rule would provide adequate incentives to meet build-out requirements, speed the deployment of service to the public, and provide additional ways for making smaller license areas available.[91/] Such a rule would also promote access to capital markets to support network deployment, as it would alleviate investor concern that failing to meet the final build-out would cause the license to terminate automatically.[92/]

B. Licensing Areas

Like some commenters, T-Mobile noted its support for licensing the AWS-3 spectrum on an Economic Area ("EA") basis, as doing so would be consistent with licensing regimes used for similar swaths of spectrum.[93/] These parties explained that EAs "reflect a suitable and appropriate compromise" between smaller Cellular Market Areas ("CMAs") and larger Major Economic Areas ("MEAs") or Regional Economic Area Groupings ("REAGs").[94/]

Other commenters, however, advocated that the Commission auction the AWS-3 licenses on a CMA basis.[95/] These carriers argue that adopting smaller geographic license areas will increase participation by rural and smaller carriers in the AWS-3 auction, therefore driving

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90/ *See, e.g.*, CCA Comments at 9-10; Verizon Comments at 22; AT&T Comments at 14; USCC Comments at 68-70.

91/ *See, e.g.*, CCA Comments at 9-10; AT&T Comments at 14; USCC Comments at 68-70.

92/ *See, e.g.*, CCA Comments at 10.

93/ *See, e.g.*, T-Mobile Comments at 29; Mobile Future Comments at 15; Verizon Comments at 13-15; AT&T Comments at 12.

94/ *See, e.g.*, Mobile Future Comments at 15; Verizon Comments at 14.

95/ *See, e.g.*, USCC Comments at 27-36; CCA Comments at 7-9; Comments of the Rural Wireless Association, Inc. f/k/a Rural Telecommunications Group, Inc., GN Docket No. 13-185 (filed Sept. 18, 2013) ("RWA Comments"); Letter from George W. Whiteaker, Counsel for Atlantic Seawinds Communications, LLC, to Marlene H. Dortch, Secretary, FCC, GN Docket Nos. 12-268 & 13-185 (filed Sept. 18, 2013); Letter from George W. Whiteaker, Counsel for Public Service Wireless Services, Inc., to Marlene H. Dortch, Secretary, FCC, GN Docket Nos. 12-268 & 13-185 (filed Sept. 18, 2013); Comments of Bluegrass Cellular, Inc., GN Docket No. 13-185 (filed Sept. 18, 2013) ("Bluegrass Comments").

auction revenues, and will further Congressional directives to promote service to rural areas.[96/] They assert that licensing the AWS-3 spectrum on a CMA basis "would be suitable to small and rural telephone companies because they would be better positioned to obtain local licenses suited to their budgets and business plans."[97/] They also discuss that secondary markets do not provide small and regional carriers with sufficient access to spectrum.[98/] At least one commenter further notes that "smaller license sizes can help to maximize the amount of spectrum available for auction by minimizing the effect of federal exclusion zones, should they prove necessary."[99/]

T-Mobile recognizes that CMA licenses may be attractive for carriers targeting limited geographic areas and that EA licenses may be attractive for carriers seeking access to larger geographic areas. Accordingly, T-Mobile supports a hybrid approach under which some licenses would be auctioned on a CMA basis and others on a larger EA basis. While CCA generally supports a CMA-based licensing approach, it also notes that "[a]lternatively, the FCC should consider licensing the spectrum in a variety of geographic sizes, much like it did for the AWS-1 spectrum."[100/] T-Mobile believes that adopting this combined approach will provide both large and small carriers with ample opportunity to tailor their participation in the auction to their respective individualized business needs.

C. Auction Procedures

As T-Mobile discussed in the H Block proceeding, the Commission should consider modifying certain aspects of its auction processes to increase auction participation and

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96/ *See, e.g.*, 47 U.S.C. § 309(j); RWA Comments at 2; Bluegrass Comments at 4; USCC Comments at 27-36; CCA Comments at 7.

97/ RWA Comments at 5.

98/ *See, e.g.*, USCC Comments at 32-35.

99/ CCA Comments at 8.

100/ *Id.*

efficiency.[101/] For example, the Commission should set reserve prices that strike an appropriate balance between maximizing revenues and encouraging auction participation.[102/] It also should establish minimum opening bids and additional bid amounts that will expedite the auction process.[103/]

In addition, T-Mobile joins CCA in encouraging the Commission to conclude its mobile spectrum holdings proceeding.[104/] As T-Mobile has previously explained, the Commission should reevaluate its mobile spectrum holdings policies and adopt reasonable spectrum aggregation limits to avoid excessive concentration.[105/] T-Mobile has recommended, among other things, that the Commission impose an overall spectrum cap as part of the auction process.[106/] A clear spectrum cap – for example, an aggregate cap equal to one-third of the spectrum available for mobile wireless services – would provide significant benefits. For example, auction participants would have greater certainty that auction results would not later be compromised or post-auction divestitures required, which could drive auction participation.[107/] A spectrum cap would also facilitate post-auction review of licensees' holdings.[108/] If the Commission adopts T-Mobile's proposal, there would be no need to apply any additional or special mobile spectrum holdings policies to the AWS-3 bands.

101/ *See, e.g.*, Comments of T-Mobile USA, Inc., AU Docket No. 13-178 (filed Aug. 5, 2013).

102/ *See id.* at 6.

103/ *See id.* at 7.

104/ CCA Comments at 10.

105/ *See, e.g.*, Comments of T-Mobile USA, Inc., WT Docket No. 12-269 (filed Nov. 28, 2012) ("T-Mobile Mobile Spectrum Holdings Comments"); Reply Comments of T-Mobile USA, Inc., WT Docket No. 12-269 (filed Jan. 7, 2013) ("T-Mobile Mobile Spectrum Holdings Reply Comments").

106/ *See id.*

107/ *See, e.g.*, T-Mobile Mobile Spectrum Holdings Comments at 8-12; T-Mobile Mobile Spectrum Holdings Reply Comments at 12.

108/ *See id.*

Last, T-Mobile supports Verizon's proposal to narrow the anti-collusion rule. As Verizon points out, the Commission's current approach "goes well beyond the nation's antitrust laws," and there is "no evidence that it enhances the competitiveness of the auction process and of the post-auction market structure."[109/] Instead, the current anti-collusion rule creates uncertainty, which in turn discourages auction participation and hinders unrelated business activities. Routine business and technical discussions that do not relate to bidding strategy or post-auction market structure are not prohibited by the anti-collusion rule and pose no threat to the integrity of the auction process.

As a result, T-Mobile agrees with Verizon that the Commission should narrow the scope of the anti-collusion rule by (1) applying it only to discussions that directly convey information regarding bidding or post-auction market structure, (2) confirming that discussions regarding generic technical handset and network issues are not prohibited, (3) narrowing the definition of "applicants" to include the filing entity and its controlling equity interest holders only, and (4) shortening the effective period to the period between the short-form application deadline and when bidding closes.[110/] These common-sense guidelines will not interfere with the primary purposes of the anti-collusion rule, which are "to prevent parties from 'agreeing in advance to bidding strategies that divide the market according to their strategic interests and disadvantage other bidders,' to 'strengthen confidence' in the bidding process, and to 'help ensure that the government receives a fair market price for the use of the spectrum.'"[111/] On the contrary, the proposal will enhance competition by encouraging widespread auction participation among

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109/ Verizon Comments at 17 (internal quotations omitted).

110/ *Id.* at 17-20.

111/ *Id.* at 17 (*quoting Implementation of Section 309(j) of the Communications Act - Competitive Bidding, Second Report and Order*, 9 FCC Rcd 2348, ¶ 221 (1994)).

parties that may otherwise fear that participation in the auction would interfere with their day-to-day operations.

VIII. CONCLUSION

In order to ensure that the AWS-3 spectrum is put to its best and highest use, T-Mobile respectfully requests that the Commission adopt the suggestions of commenters in this proceeding to clear the AWS-3 spectrum as much as possible, auction it on a paired basis, and take the other actions outlined above.

Respectfully submitted,

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October 28, 2013